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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,806	01/26/2004	Donald A. Shiffler JR.	PRS0732-DIV	4438

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EXAMINER

BARR, MICHAEL E

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/764,806	Applicant(s) SHIFFLER, DONALD A.	
	Examiner Michael Barr	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3 is/are allowed.
- 6) ☒ Claim(s) 4-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/26/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to because there is only a single drawing and it is labeled as "Fig. 1". Where there is only a single drawing to illustrate the claimed invention, it must not be numbered and the abbreviation "Fig." must not appear (See MPEP 608.02). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. ***Please note that the specification would also be corrected accordingly to remove reference to "Fig. 1".***

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 4 and 7-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The following list of claimed limitations are considered to be new matter as they do not have basis in the specification and since they do not have basis in the parent application 09/681,703, of which this application is a divisional.

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- Claims 4, 7, 11, and 17 cite providing a film thickness of 1 angstrom to 10 microns. This thickness is not described in the specification.
- Claims 4, 7, and 11 cite that the carbon velvet material has a plurality of shafts. This feature is not described in the specification.
- Claims 6, 10, 12, 16, and 18 cite that the coating step coating only the tips of the carbon velvet. This feature is not described in the specification.
- Claims 8-9 cite the limitations that a cesiated salt solution is vaporized and that the forming step includes the evaporation of the deionized water, respectively. The specification does not teach that a solution of the salt is applied by vapor deposition techniques and thus accordingly the limitation that the forming step includes the evaporation of the deionized water is also not described in the specification.
- Claim 13 cites that the solution is cooled while the fibers are immersed. This feature is not described in the specification.
- Claim 14 cites that only the tips are dipped into the solution. This feature is not described in the specification.
- Claim 15 cites that the fibers are cooled after being removed from the solution. This feature is not described in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by the article by Garate et al.

Garate et al. teaches providing a plurality of shafts of carbon fibers perpendicularly attached to a graphite base, which is bonded to a cathode for a field emission cathode, forming a solution of a cesiated salt, and coating the carbon fibers with the cesiated solution, wherein the carbon fibers attached to the graphite base read on the claimed carbon velvet (see Fig. 2; Apparatus and Experimental Results section).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6-7 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garate et al.

Garate et al. is cited here for the same reasons as given above. Garate et al. does not teach the thickness of the cesiated salt coating applied to the fibers. Garate et al. is silent as to this feature. However, it would have been obvious to one skilled to determine an optimal or working coating thickness for the cesiated salt in Garate et al., through routine experimentation, in order to provide a coating thickness which would provide the desired benefits of the cesiated salt on the carbon fibers of the cathode. It is the examiner's position that the claimed coating

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thickness would have been obvious to one skilled in the art practicing Garate et al., through such routine experimentation.

Garate et al. does not teach coating only the tips of carbon fiber shafts. However, since Garate et al. teaches applying the coating to the fibers by application with a brush, which would introduce coating to the fibers at the tips, it would appear that only application to the outer surface of the carbon fibers (i.e. the tips of the fibers) is critical for achieving the desired result, and thus limiting the application of the coating to the tips of the fibers in Garate et al. would have been an obvious modification, with the expectation of providing the desired cesiated salt coating to the carbon fibers of the cathode.

Allowable Subject Matter

8. Claims 1-3 are allowed.
9. Claims 4, 8-10, and 13-18 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, set forth in this Office action.
10. The following is a statement of reasons for the indication of allowable subject matter:
None of the prior art cited or reviewed by the examiner teaches or fairly suggests the claimed methods of applying the cesiated salt solution to the carbon velvet, where the salt solution is applied by spraying, then baking in a vacuum and venting the vacuum with dry nitrogen (Claim 1), or where the salt solution is applied by vapor deposition (Claim 8), or by dipping in a molten salt solution (Claims 13 and 15).

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Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Barr whose telephone number is 571-272-1414. The examiner can normally be reached on Monday-Thursday 6:00 am-3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Barr
Primary Examiner
Art Unit 1762



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May 27, 2004